

COST action PESFOR-W

Short Term Scientific Mission (STSM) scientific report

Topic: WG1 - PES Design and Governance and WG3 - PES Cost-Effectiveness

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1. Introduction

The aim of this Short Term Scientific Mission (STSM) was to investigate five Payment for Watershed Services (PWS) programs in Switzerland that have been identified to be involved with forests (Leonardi 2015). During the STSM a sixth case study was found and investigated.

The original methodology was to conduct face-to-face interviews with experts from as many of the case studies as possible to identify governance aspects and collect financial data for analysis of cost-effectiveness (see appendix for expert profiles). The semi-structured style of the interviews furthermore allowed experts to add information they deemed important.

After the first face-to-face interviews and other inquiries, it did, however, quickly become apparent that many of the case studies either did not involve forest areas or were not eligible under the applied definition of payment for ecosystem services (PES) schemes (see table 1; Wunder 2005). Since this was the case, the objective of the STSM was expanded to also investigate why PWS schemes involving forests in Switzerland seem rare, and if this trend would continue in the near future.

2. PWS schemes in Switzerland

From the six PWS schemes investigated four have been examined and classified (see table 1). Additional information can also be obtained from Leonardi (2015).

One program, the National Nitrate Strategy, was classified as a PWS program, but focused on agricultural land and did not include forests (BLW 2013; Badertscher, pers. com., 21/04/2017). Two more programs, the city utility Basel (CH3) and the program in Winterthur (CH4) were not deemed eligible since in both cases the forests were owned by the city utility or the local government itself (see 3.3. for more information). The new emerged case study of Baden (CH6) fulfilled the PESFOR-W classification and is described in more detail in 2.1.

The two remaining case studies could not be investigated in time, but are still open and correspondence with the responsible experts is on-going.

Table 1. Classification of the 6 investigated PWS schemes. Four cases are fully investigated and considered closed; two of them can be considered PES, but none of them PESFOR-W.

ID	Name of the program	Eligible as PES	Forest areas included	Watershed services as main interest	PESFOR-W	Status
CH1	Swiss National Nitrate Strategy	Yes	No	Yes	No	closed
CH2	Henniez SA	Yes	Yes	?	-	open
CH3	Basel water utility	No	Yes	Yes	No	closed
CH4	Winterthur	No	Yes	Yes	No	closed
CH5	Lausanne water supply	?	Yes	Yes	-	open
CH6	Baden water utility	Yes	Yes	Yes	Yes	closed

2.1. Baden and the local brewery Müller - case study CH6

The municipality Baden owns a forest area of about 500 ha in Müsern auf der Baldegg. Within this forest the Münzlishausener spring is located, and the local brewery Müller AG owns the right to extract water from this spring since 1886. Furthermore the area is highly frequented by locals for recreation.

After the hurricane Lothar destroyed big parts of the forest in 1999 the municipality undertook measures to facilitate the forest restoration, while retrieving its high ecological and aesthetic values, and informing visitors about on-going projects (Oberlin and Niedermann (CH6), pers. com., 28/04/2017). The brewery Müller participated in these efforts through a sponsoring program of about 50 000 CHF for a five year period (now renewed for the fifth time and the same amount of money) to properly manage the water protection forest zones. This makes a total investment up to date of about 250 000 CHF (Schmidlin et al., 2010; Meier, 2005).

According to Oberlin and Niedermann (CH6) this scheme is publicly driven, given the municipality originally approached the brewery and offered an eco-sponsoring partnership. Nevertheless, both recreation and water quality protection have an equally high priority.

Even though the management is an exclusive responsibility of the municipality Baden, there is close collaboration with the brewery. Given the fact that other sponsoring programs exist for the same forest area but with other purposes (e.g. "Monumental trees and biodiversity" with the Merz Holding AG and 170 000 CHF up to 2016, Schmidlin et al. 2010), this PWS scheme is part of a bigger layering system, in

which "multiple buyers pay separately for the ecosystem services that are provided from the same land manager and/or ecosystem" (Leonardi 2015, p. 26, as taken from Porras et al. 2013).

One aspect with the program, however, should be highlighted:

"For the management of the forest the same criteria apply regardless whether or not the eco-sponsoring agreement exists." (Oberlin and Niedermann (CH6), pers. com., 03/05/2017; translated by Bodner).

This challenges the PES criteria of additionally and subsequently the motives of the brewery to enter into the contract, if the management within the forest would remain similar without their contribution. An inquiry to the brewery to clarify this is still ongoing.

3. The political, social and economic basis for Swiss PESFOR-W schemes

During the interviews five aspects that make the development of PESFOR-W schemes in Switzerland difficult have been identified. Some of them can be applied to PES schemes in general, while others are more specific to the Swiss laws and social context:

3.1. Swiss water quality and supply is fairly good

Switzerland generally has plenty supply of fresh water and the overall water quality is considered very good (Blanc and Schädler 2013). In the 1980s efforts have been made to improve water quality at the time, such as the ban of phosphate in laundry detergents and the upgrade of waste water treatment (Blanc and Schädler 2013; Badertscher, pers. com., 21/04/2017). These efforts were indeed successful.

Emerging threats to water quality and quantity are mostly (a) the continual input of nitrate (and phosphate) from agriculture, (b) the increase of micro pollutants, and (c) the changes in rainfall patters due to climate change.

At present water quality is, however, still quite good, which means that any additional measures to protect it are often considered unnecessary.

3.2. Water quality as a watershed service is perceived as an inherent public good

Several experts have voiced their personal opinion on the social context regarding water in Switzerland (e.g. Ovando Pol, pers. com., Moser (CH3), pers. com., 26/04/2017). According to them Swiss people perceive water quality as something very "close" to them. The Swiss inherently expect good water quality to be present; yet this implicitness in return makes it hard to argue in favour of a PWS scheme that asks consumers to *pay* for this exact watershed service.

3.3. The average size of a private forest is just 1.5 ha

Switzerland has about 1.3 million ha of forest, only 29% of which are owned privately

(BAFU 2016). In contrary to other countries like Austria and Germany the roughly 240 000 private Swiss forest owners do, however, only own about 1.5 ha on average (about two soccer fields). Furthermore they mostly manage their small forest parcels for personal needs only; that is if they manage them at all (since there is no legal requirement to do so in Switzerland; WaldSchweiz n.d.).

Given the small size of private forest parcels this means many different forest owners would have to be involved in PWS schemes and answered to - and all that on a voluntary basis from their side. This makes it very difficult to run such a program on a long term; especially since some experts already explained how much convincing and negotiating is necessary with only a small group of landowners (Badertscher (CH1), pers. com., 21/04/2017; Moser (CH3), pers. com., 26/04/2017).

This is also one of the reasons forested land is often just bought. This strategy of buying the land instead of making contracts with the original owners was the case with the Basel city utility (CH3) and especially Winterthur (CH4) (Moser (CH3), pers. com.; Wassmer (CH4), pers. com.), and has been reported from case studies outside Switzerland as well (e.g. Germany or France).

3.4. Swiss laws and regulations create limitations and negative externalities

According to the Swiss Civil Code (Zivilgesetzbuch, ZGB) Article 699 every person is allowed to enter a forest, as well as collect forest goods (berries, mushrooms, etc.). The right to assign hunting and fishing concessions also does not lie with the forest owner, but with the individual Kanton (Bvers, 2017; Bürgi, pers. com., 24/04/2017). On the other hand a forest owner *is* obliged to ensure the sustainability of his/her forest, but what this exactly means is again defined by the Kanton, not by the forest owner (Swiss Forest Law, WaG, Article 20).

These laws create a variety of negative externalities that are "nearly impossible to internalize" since that would likely violate a governmental law (Bürgi, pers. com., 24/04/2017). And any potential PWS scheme would be limited in its options, since it could not ban actions or ask financial compensation for something that is allowed by Swiss law anyway (Bürgi, pers. com., 24/04/2017).

One option a PWS program would still have is to influence the forest management itself, for example by facilitating the transition from conifer stands to more mixed and/or broadleaved stands. This has been done in the Eco-Broye Project (CH2; Oertle 2016), but according to Bürgi (24/04/2017) the scientific basis to argue in favour of broadleaves is "thinner than advertised" (e.g. regarding the changes in infiltration rates).

3.5. The biggest threat to groundwater is nitrate

The biggest imminent threat to groundwater quality in Switzerland right now appears to be the high nitrate input from agriculture. This is why the main focus lies on agricultural fields, not forests. Since the year 2000 the Nitrate projects running within

the National Nitrate Strategy program (CH1) have invested more than 80 million CHF to get the nitrate values below the required 25mg/l washout (Swiss Water Protection Law - Gewässerschutzgesetz, appendix 2, Article 22). And in the near future there is still enough budget allocated to keep up the program and further expand (Badertscher (CH1), pers. com.).

It should also be noted here that the agricultural lobby in Switzerland is perceived as "very powerful" (Bürgi, pers. com., 24/04/2017; Badertscher (CH1), pers. com., 21/04/2017), which is said to influence the allocation of governmental funding for any PWS projects.

4. Conclusion of the STSM on Swiss PESFOR-W schemes

The STSM to investigate Swiss PESFOR-W schemes was an excellent opportunity to collect primary data and interact with other scientists working in similar fields.

Of the six case studies only one clearly identified as a PESFOR-W program, two others are still under investigation. Nevertheless a lot of information could be collected about the social, legal and economical background that helps to explain the complications of creating PWS schemes in Switzerland. Even though the laws and regulations are not likely to change in the near future, the "Swiss people slowly become aware of the water quality problem" (Bürgi, pers. com., 24/04/2017). A change in social attitude could facilitate the creation of new PES, PWS and PESFOR-W schemes, which is why further monitoring and updates on the Swiss case studies is recommended.

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